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ABSTRACT

The American Institute of Physics (AIP) publishes 87% of the primary research journals in the discipline of physics in the United States. These journals have provided an indispensable communication mechanism for research results and education in physics and astronomy. A redesign of the present journal system is required because of expansions in size, increased interdependences of science disciplines, higher expectations of physicists and reasonable availabilities of new technologies. Designing and phasing into a new system must be based on an understanding of the basic economics of the present system. Thus, the focus of this report is on the financial aspects of today's AIP publishing program with some preliminary thoughts on new, more user-oriented journals. (NH)

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ECONOMICS OF PRIMARY JOURNALS IN PHYSICS

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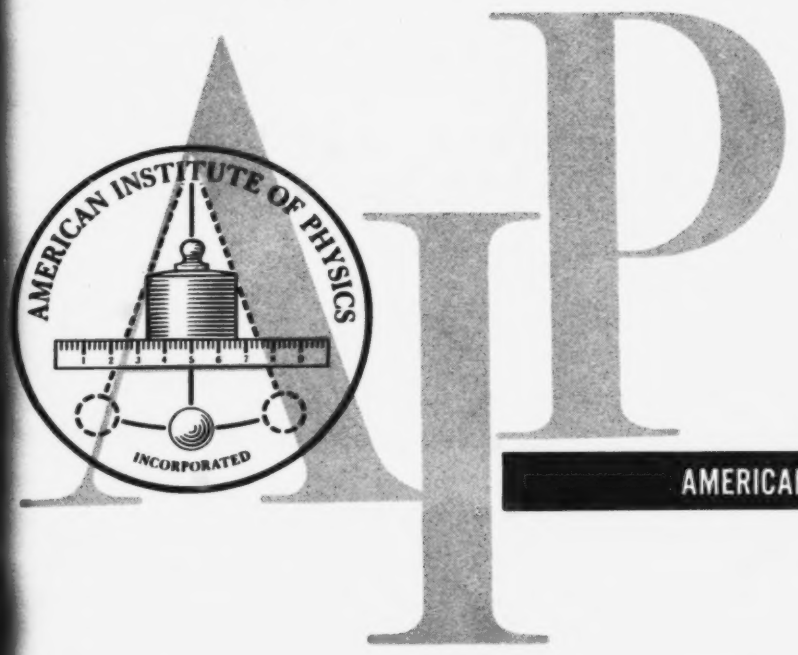

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ECONOMICS OF PRIMARY JOURNALS IN PHYSICS*

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Introduction

Primary research journal publishing in the discipline of physics** in the United States is concentrated (87%) in the American Institute of Physics. AIP journals comprise the 18 titles listed in Tables 1A and 1B. These journals are published by AIP for itself (1A) and its member societies (1B). The data in the tables give circulation, size, and cost figures that have been compared extensively by C. Herring[1] and others[2] with figures for other journals in various disciplines of basic science and technology. The comparisons are very favorable to the economics and efficiencies of the publishing operations of AIP.

Problems of production, distribution, and utilization of the existing primary journal system in physics are becoming evident due to expansions in size, increased interdependencies of science disciplines, higher expectations of physicists, and reasonable availabilities of new technologies that are requiring a redesign of the present system[3,4]. Designing and phasing into a new journal system requires that there exist an understanding of the basic economics of the present system. This report will focus on the financial aspects of today's AIP journal publishing program and will offer some preliminary thoughts on new, more user-oriented journals. Basic to this focus is an explanation of operational concepts and editorial policies of AIP journals, the page charge concept in physics journals, the present experiences with the concept, and the anticipated role of page charges in any future journal system.

*A talk based on this report will be presented in a session entitled "Economics of Scientific Publication" chaired by Burton W. Adkinson, to be held at the AAAS meeting in Boston, Massachusetts on 29 December 1969.

**Although the term "physics" is used throughout this paper, astronomy is assumed to be included; in the U. S., The American Astronomical Society is a member society of the American Institute of Physics.

Operational Concepts

The most important operational concepts basic to the favorable statistics at AIP are the federation concept of running a publishing business for scientific societies and the page charge concept.

As a federation, AIP performs those communal operations for the member societies that provide benefits resulting from centralized operations[5]. The societies concentrate on scientific and technical affairs, while AIP concentrates on business and administrative operations that the societies prefer not to do themselves. Since the societies are autonomous, they carefully examine the cost, timeliness, and quality characteristics of AIP operations and insure that their memberships are being best served by the centralized operation. The self-criticism, competitiveness, and efficiencies inherent in the AIP relationship to the societies has resulted over many years of operation in a publishing operation that has served as a model for other non-profit as well as for-profit publishers. This publishing operation of primary research results is the largest of its kind in the world.

The second concept that is of over-riding importance is the page charge. Page charges of the order of $60 per printed journal page were in effect in calendar year 1968 for AIP-owned journals. These charges were established by the AIP Governing Board to be an equitable contribution by authors' institutions to cover most of the editorial and composition costs of the pages published for authors. The remaining production costs of printing and mailing are borne by the subscribers. Page charges were pioneered in AIP journals in 1930[6] and have represented a non-obligatory subsidy by authors' institutions. This is to some extent comparable in principle to the subsidies implicit in the guaranteed subscriptions of libraries and in advertising income on which many commercial journals have been largely dependent. The page charge income has permitted a concentration by AIP on the maintenance of high standards of scientific quality,

timeliness, and low cost. For example, the advertising in AIP journals is relevant to physics research and education needs and is not included in journals for the sole purpose of deriving income[7]. Page charges have also permitted the pricing of AIP journals for the benefit of individual subscribers as contrasted to the pricing of for-profit journals primarily for institutional subscribers. The member pricing of some AIP-published journals is as low as 0.29¢ per page and is to be compared to the pricing of for-profit publishers that is sometimes as much as 5 to 8¢ per page[1].

Editorial Policy

Individual journal characteristics such as content, quality, timeliness, and cost by and large reflect the general editorial policy applicable to a particular journal. Editorial policy is determined by AIP and member society publication boards and scientific editors of the journals.

The most significant policy procedure relating to journal quality is the referee system that is quite time consuming. On the average, refereeing time consumes about half the average total time of six months (submission of manuscript to scientific editor to publication of article in AIP or society journal).

In addition to pre-production quality control, editorial policy dictates the character of copy-editing and subsequent production procedures. Centralized copy marking and proof checking at AIP has resulted in a low cost and efficient operation by a staff of over 70 people. Proofreading of galley pages by the author allows authors to review printed versions of articles and institute corrections and minor changes. Page proof checks by AIP editors insure even further and last minute quality control to all AIP and member society journals.

These various production steps are intricate and time consuming. Typical scheduled times for each step are as follows: manuscript at AIP for copy marking (7 days), composition at printer (29 days), galleys with AIP or author (12 days), galleys at printer for paging (12 days), pages at AIP (5 days), and pages at

printer (20 days). (Characteristics of AIP journals relating to these production procedures are noted in Table 2.)

The letters journal, pioneered in physics by Dr. Samuel Goudsmit, editor in chief of The American Physical Society, is produced on a much faster schedule than that of the standard journal noted above.

In the case of PHYSICAL REVIEW LETTERS, an example of this "streamlined" type of journal, Dr. Goudsmit and his staff have gone to typewriter composition, eliminated galley check by authors and drastically cut the refereeing time of these short articles called "letters." Publication of letters is often only four to five weeks from the time they are submitted by authors to the journal editor. Similar production short cuts on some of the standard physics journals could be instituted at increased cost with encouragement from authors and subscribers. A revision of editorial policy would, of course, be required before making a change of this magnitude in the character of a standard journal.

Production Costs of AIP-Owned Journals

Presentation of production costs of AIP-owned journals of Table 1A can only be given in this brief report by grouping the costs as if the journals were a single journal, operated with one scientific editor, and one printing firm. Unfortunately, this grouping does not allow an understanding of the individual operations of each journal which vary enormously because of the complexity of the scientific content of the journal, the personal preferences of the editor for operational details, and the requirements of individual physics subdisciplines for certain types of information such as patents, book reviews, and equipment descriptions. A discussion of each individual journal would require very detailed explanations of these complexities that are not consistent with the purposes of the present report. Statements of the individual variations of journals within a grouped cost will be made where appropriate.

Table 3A lists the pre-run costs of editorial work and composition: typesetting (or its equivalent), authors' alterations, engravings, editorial mechanics (or copy editing for the printer), editorial management (or scientific editing), costs of free reprints (in return for page charge payment), and order handling. Table 3B lists the costs of printing, mailing, and subscription handling, usually referred to as run-off or output costs. The pre-run expenses of Table 3A are partially covered in AIP-owned journals by page charge income, while the run-off expenses of Table 3B are intended to be covered by subscription income. The advertising income associated with the REVIEW OF SCIENTIFIC INSTRUMENTS and JOURNAL OF APPLIED PHYSICS is not included in the tables.

One over-all conclusion that can be drawn from the data of Tables 3A and 3B concerns the variations in the pre-run costs per page and the run-off costs per page over the past five years. These normalized data as given in Figure 1 demonstrate that the pre-run costs per page have had a slow but steady increase from about $47 per page in 1964 to almost $55 per page projected for 1969. When one realizes that the pre-run costs are largely salaries of compositors and editors, the increase of 17% over 5 years is certainly reasonable. The consumer price index for this same period has risen over 20%.

A closer examination of the data in Table 3A shows that the editorial management (or scientific editing) costs per page went from $7.54 in 1964 to $6.57 while the editorial mechanics (or copy editing) costs per page went from $5.87 in 1964 to $8.90 in 1969. The decrease in the scientific editing costs per page while the copy editing costs increased, demonstrates the difficulty of generalizations. The decrease in one and increase in the other suggests that there may have been an increasing shift of work-load from the scientific editor to the copy editors at AIP headquarters. The relative changes in the two costs also suggests changes in the content and role of the journals due primarily to choices and decisions by the scientific editors.

Study of the editorial mechanics costs among the various AIP-owned non-letters journals shows variation from one journal to another of $7.92 to $9.02 for calendar year 1968 while the average for the year was $8.47. Again the individuality of the editor and the complexity of the journal content play an important role here. As noted previously, these factors appear also in the comparable investments per page in scientific and copy editing.

Another interesting conclusion to be drawn from the data of Table 3A involves the item called composition and authors' alterations. Since the authors' alterations are 10 to 15% of the composition costs, most of the expense in this item is composition cost. Composition for AIP-journals is mostly done by monotype composition. The cost of this composition method averages about $30 per page for a page of about 6,000 characters with a great variety of characters and a considerable amount of displayed mathematics.

An analysis of this figure shows that journals with straight text can be composed for about $20 per page, while pages filled with mathematical expressions cost about $50 per page. Since many AIP journals have 60% text and 40% mathematical expressions, the result is about $30 per page.

The large investments in composition costs which are more than half of the pre-run costs make it imperative that the AIP continually experiment with new types of composition and printing. AIP has had extensive experience with typewriter composition directly in the 13 translation journals published by AIP and indirectly in the production of PHYSICAL REVIEW LETTERS published by The American Physical Society. Additionally, one section of THE PHYSICAL REVIEW has been produced by this technique since August 1968. The cost data are not yet fully established. However, the indications are that while composition costs are reduced by about 25%, copy editing costs are increased by 15 or 20%. The resulting net savings are still substantial and attractive. The diminution in typographic quality of the printed page has been acceptable to most physicists.

Experiments are also being done on computer-based composition. The first and most logical area to experiment with here is in the production of indexes where key-boarded material can be used multiple times. THE PHYSICAL REVIEW INDEX for 1969 is being produced by computer composition as will be our forthcoming awareness journal, CURRENT PHYSICS TITLES, due in mid-1970.

The economic advantages of computer composition are still to be demonstrated for textual material of the type contained in AIP journals. For straight text and mathematical expressions where the material is key-boarded once, but then only used once, the costs are still higher than for monotype composition. Wherever possible, the multiple use factor will have to be employed to take full advantage of computer composition.

In the area of run-off costs, the data in Table 3B shows that printing and mailing are by far the major expense--85% of the total run-off costs and about 30% of total costs. Unlike pre-run costs, run-off costs are closely related to the number of copies printed and sold. There are some economies in volume here, but not nearly to the extent realized with non-recurring pre-run costs. As with composition, AIP personnel are continually examining more economical and higher quality printing sources. At the present time AIP deals with twenty different suppliers (printers and compositors) in the production of sixteen primary journals, one newsmagazine, thirteen translation journals, and four meeting bulletins.

A. Page Charge Concept

The key income item in Tables 3A and 3B is that labeled page charge income. This income is important because of its large magnitude and also because of the important separation of pre-run costs from run-off costs made possible by page charges.

The acceptance of the page charge concept is demonstrated by the large magnitudes of money collected by this procedure. Table 4 shows the page charge

collections for 1968 for the various societies for which AIP publishes journals. The total was almost $2.6 million.

The reason that U. S. physicists have almost universally accepted the concept is because of the two principal tenets on which the concept is based that are logical and now part of the method of doing U. S. research in physics. The two tenets are: first, that research is not complete until the new information it generates has been made available; and second, that research funds, therefore, can properly be expected to support the publication of research results. Practical implications of these tenets include: that the research function involves experimentation (or its theoretical equivalent) plus provision for access to its results; that the cost of providing such availability is as legitimate a charge against the research dollar as are scientists' salaries and expenditures for equipment; and that spending, say $99 on experimentation and $1 on disseminating the results is to be preferred over $100 worth of experimentation that no one ever hears about. After all, scientific information is one of the principal products of every research project, and very often it is the only immediate, direct, and measurable one. And scientific journals published by society publishers long have been a major, if not the major, medium for the communication of new scientific information.

Page charge income is important, as stated earlier, because of the separation of pre-run costs from run-off costs. The importance comes from the radically different phenomena that influence pre-run from run-off. In the case of pre-run, costs have been determined by personnel salaries and changing production methods; while run-off has been influenced by changing subscription rates, number of subscribers, and output formats. The availability of page charges has allowed the separate adjustment of page charges and subscription prices. Subscription prices are adjustable only once a year, but page charges can be changed at any time with the approval of the AIP Governing Board for AIP-owned journals. The pre-run costs and delays can be influenced by the requirements of the authors

or the scientific editors working in behalf of the authors. The subscriber to the output product--the printed journal--should not be influenced by these pre-run phenomena; and he is not affected under the page charge plan. It is, in short, a very stablizing influence.

In order that authors and their institutions can develop a confidence in the page charge plan, the AIP Governing Board has carefully controlled the establishment of a page charge so that it is consistent with the pre-run costs of producing a journal. It will be noted in Table 3A that the page charge income has been less than the pre-run expense in every year, and that the subscription income has had to make up the deficit. The attempt has been to adjust the page charges to the pre-run costs per page assuming 100% honoring of the page charge. If the adjustment has been made exact, then authors' institutions pay only for the pre-run costs of their author's pages and not for the pages published for authors in institutions that do not pay the page charges.

B. Recent Experiences with Page Charges at AIP

As a result of an educational process over the years since 1930, nearly all physicists have accepted the page charge concept and have generally been able to secure the cooperation of their institutions in honoring this obligation. However, during the late fall of 1968 cutbacks in funding of the physical sciences by the National Science Foundation and other funding agencies produced a major financial crisis in the funding of U. S. physics and of physics publications. The result was a dramatic reduction in the honoring of page charges. The JOURNAL OF CHEMICAL PHYSICS which characteristically has had 72% honoring dropped to 50% honoring by January 1969. Whereas previously most of the non-honoring of page charges came from foreign institutions and from traditionally hardship cases, a high percentage of the non-honoring in January 1969 came from some of the largest U. S. research laboratories. The non-obligatory nature of the page charge made it possible for these laboratories to take advantage of the system and to avoid making

other cuts in their expenditures for research.

The severity of the problem for AIP can be demonstrated by the magnitude of the income due in principle but not realized because of the non-honoring of page charges as noted in Figure 2. Income losses of these magnitudes were intolerable because AIP and its societies have no other separate resources to cover the losses if they were to continue for any extended period. The two physics organizations that experienced the greatest economic difficulties because of reduced page charge collections were The American Physical Society and the American Institute of Physics; other societies suffered proportionately as severely as the APS and the AIP, but the dollar amounts were less. The APS and AIP adopted essentially the same techniques for dealing with the situation.

The AIP instituted a minor, but important, procedural change in the request for certification of page charge honoring, and a major policy change in the handling of a manuscript for which an authors' institution does not honor the page charge levy. The procedural change was described in an Editorial in the December 1968 issue of PHYSICS TODAY and in the new Publication Charge Certification Form. An explanatory statement accompanying the PCCF is sent to each author.

Under the procedural change, the order form, which requests certification that page charges will be honored, is mailed to the author by the editor of a journal at the time the editor informs the author his article has been accepted for publication. The response from the author's institution is sent directly to the AIP.

The policy change results in the differential handling of manuscripts for which the page charge will or will not be honored. If the page charge is to be honored, then the manuscript takes its turn in normal sequence for publication processing. If the page charge is not to be honored, the manuscript has been delayed approximately three months (two months for the APS journal, THE PHYSICAL REVIEW) beyond the normal tentative issue date during most of 1969.

Delay time is the same for all AIP journals and is adjustable during the calendar year. The magnitude of the delay was fixed by consideration of the number of pages without page charge support that the journals could afford to publish in 1969.

The differential handling of manuscripts is being called the two-track system of processing manuscripts. This is an emergency measure that will be continued only as long as necessary. It is the logical result of the need for establishing a restrictive page budget during 1969 in order not to incur unacceptable deficits.

The two-track system avoids making page charges mandatory. Papers are still selected for publication on the basis of their merit by editors and referees, without knowledge or concern as to whether page charges will be honored. At the same time, the new procedure has impressed authors and their institutions with the fact that payment of page charges is essential to the economic survival of the journals.

The response to the new policy and procedure and to the reminder of the need for financially supporting the primary journals has been positive and very encouraging. The cumulative honoring percentages for AIP-owned journals as shown in Figure 3 and Figure 4 demonstrate the dramatic recovery up to present averages of 80%. This is a striking testimony to the support by the physics community of their basic communication mechanism, the primary research journal.

Redesign of the Primary Journal in Physics

The recovery from the financial crises of 1969 and the establishment of new controls and procedures for page charge collections insures the continuation for the immediate future of AIP journals with operational and editorial policies that have been so important in the development of physics in the U. S. Let us therefore examine the future prospects of the journals and the important involvement of economics.

As stated above, AIP journals are produced to serve individual subscribers. Unfortunately, individual subscriptions to journals are not increasing as fast as the population of physicists is increasing. The reasons are clear.

A basic reason is economics. Even though a member can subscribe at phenomenally low prices per page, the number of pages to which he should subscribe is going up so fast that the absolute subscription cost is becoming intolerably high for an individual member. The solution for a growing number of physicists is the photocopying of pages out of library journals. Even though the photocopying costs may be ten times the subscription cost per page, the selectivity provided by the physicist makes his own customized "separates" journal attractive and relatively inexpensive.

The experiences with photocopying are going to be turned to the advantage of the physics community because of the pressures on AIP to provide published information in a variety of formats including the photocopying format. If physicists and astronomers want the original journals (i.e., hard-copy journals), or microfilm or microfiche versions, or photocopied pages, or bibliographic computer tapes, or combinations of these formats, AIP is developing the production and distribution techniques to provide them.

Page charges allow and encourage the development and sale of these various formats of the journal because the charges essentially cover the costs of producing one copy of the journal. Any number of other formats based on that one journal copy can be produced and sold at close to the production cost of each individual format. Thus page charges are encouraging AIP to examine other and more profound changes in the primary journal system.

With financial support from the National Science Foundation, AIP has undertaken a study of such changes to solve the growing information problems of the physics community. One such solution may be the redesign and operation of the primary journal system in a two step process:

1. Non-duplicating publication in archival journals that cover many subdisciplines as at present.
2. Republication with as much duplication as needed in selective smaller packages designed to fit the desires of specific groups of physicists, other scientists, and engineers as determined by standard interest profiles. The packages are being called User Journals as contrasted to the archival journals of step 1.

Analyses of the implications of user journals on the present archival journal system[4] as well as extensive discussions with editors, advisory committee on the AIP Information Program, and AIP Governing Board will be necessary before any redesigned journal system including user journals can be put into effect.

Conclusion

Primary journals published by the American Institute of Physics have provided an indispensable communication mechanism for the results of research and education in physics and astronomy. This mechanism has been produced economically in cost and time along with its emphasis on quality, objectivity, and general service.

The temporary crises with AIP journals in 1969 because of the nonpayment of page charges were not rooted in a concern of physicists about the continued utility of the journal system or about poor production standards, but were based on a faulty procedure for allowing authors' institutions to accept the page charge obligation. As a result of improved procedures, no future problems with page charge collections are anticipated and AIP fully expects an important and continued role for its primary journal system.

Acknowledgment

The primary journal program of AIP is a publishing operation made successful by the dedication and contributions of many persons over many years. The most

recent important contributors are exemplified by: Dr. S. A. Goudsmit, who is representative of our scientific editors and has been editor of THE PHYSICAL REVIEW since 1951; Dr. Hugh C. Wolfe, who is representative of AIP staff and has been director of the AIP Publications Division since 1960; and Dr. Ralph Sawyer, who is representative of the physics community and has been chairman of the AIP Governing Board since 1959. AIP gratefully acknowledges the advice, support, and involvement of these three gentlemen and the groups of which they are representative.

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Figures and Tables

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TABLE 1A

1968 Data for AIP Journals

Journal	Vols./Year & Frequency	Text Pgs. Published	Member Rate	Non-Mem. Rate	Circulation (July 1968)	Non-Member Rate/Page (¢)	Page Charge
Appl. Phys. Lett.	2(semimonthly)	1,002	$ 7.50	$ 15.00	4,013	1.4	60
J. Appl. Phys.	1(monthly)	6,364	15.00	25.00	8,441	0.39	55
J. Chem. Phys.	2(semimonthly)	11,544	25.00	45.00	6,409	0.39	60
J. Math. Phys. (N.Y.)	1(monthly)	2,380	15.00	30.00	3,025	1.0	60
Phys. Fluids	1(monthly)	2,856	15.00	30.00	3,665	1.0	60
Rev. Sci. Instrum.	1(monthly)	2,007	11.00	13.00	8,917	0.6	60
Phys. Today	1(monthly)	1,646	-	4.00	53,587	0.2	none

TABLE 1B

1968 Data for Member Society Journals

Journal	Society*	Vols./Year & Frequency	Text Pgs. Published	Member Rate	Non-Mem. Rate	Circulation (July 1968)	Non-Member Rate/Page (¢)	Page Charge
Amer. J. Phys.	AAPT	1 (monthly)	1,273	-	$ 12.50	12,826	0.98	25
Appl. Opt.	OSA	1 (monthly)	2,520	$12.00	24.00	6,145	0.95	40
Astron. J.	AAS	1 (10 x yr.)	1,372	12.00	20.00	2,597	1.4	45
Bull. Amer. Phys. Soc.	APS	1 (monthly)	1,816	-	12.00	27,622	0.7	none
J. Acoust. Soc. Amer.	ASA	2 (monthly)	3,456	-	27.00	7,209	0.8	50
J. Opt. Soc. Amer.	OSA	1 (monthly)	1,786	-	30.00	8,498	1.7	25
Phys. Rev.	APS	12 (72 x yr.)	23,676	50.00	100.00	11,761	0.4	60
Phys. Rev. Lett.	APS	2 (weekly)	4,326	15.00	30.00	12,614	0.7	60
The Phys. Teach.	AAPT	1 (8 x yr.)	156	5.00	5.00	8,455	3.0	none
Prog. Acoust. Soc. Amer.	ASA	(semiannually)	140	-	3.00	4,300	2.1	none
Rev. Mod. Phys.	APS	1 (quarterly)	904	6.00	8.00	11,856	0.9	none

*Societies are: (AAPT) American Association of Physics Teachers; (OSA) Optical Society of America;
(AAS) American Astronomical Society; (APS) The American Physical Society;
(ASA) Acoustical Society of America

Table 2

Characteristics of AIP-Published Journals

1.	No. of words per page	900-1,050
2.	No. of characters per page	6,000
3.	Size of character set	1,200 different characters
4.	Average length of journal article	7.5 pages
5.	No. of suppliers (compositors-printers) used by AIP in 1969 journal publishing program	20
6.	No. of journal pages published per year (1969)	88,000

Table 3A

PRE-RUN COSTS FOR AIP JOURNALS**

	1964	1965	1966	1967	1968	Revised Budget 1969
Income:						
Page Charge	$ 680,661	783,026	858,609	1,044,794	1,057,283	1,164,050
Conference Contribution	6,500	12,000	9,000	17,800	32,097	10,000
Expense:						
Composition & Authors' Alterations	$ 479,012	582,518	657,609	704,492	733,991	788,100
Engravings	63,273	71,188	86,350	95,936	101,352	104,200
Editorial Management	136,836	124,477	137,131	146,453	165,913	172,450
Editorial Mechanics	106,358	122,104	141,126	173,444	212,267	233,600
*Cost of Free Reprints	40,069	45,236	50,427	55,045	56,979	65,150
*Order Handling Charge	8,576	15,588	18,104	18,308	22,478	27,650
	$ 834,124	961,111	1,090,747	1,193,678	1,292,980	1,391,150
Excess of Income over (Expense)	$(146,963)	(166,085)	(223,138)	(131,084)	(203,600)	(217,100)
Statistical Data:						
Number of Text Pages (Including blanks & covers)	18,129	20,613	22,636	24,799	26,153	26,232
Text pages less 2%	17,766	20,201	22,183	24,283	25,630	25,707
Input Cost/Corrected Page	46.95	47.58	49.17	49.16	50.45	54.12

*Estimated

** Does not inlcude data on PHYSICS TODAY

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Table 3B

RUN-OFF COSTS FOR AIP JOURNALS*

	1964	1965	1966	1967	1968	Revised Budget 1969
Income:						
Subscriptions	$ 608,445	639,711	654,267	785,826	788,057	792,750
Expense:						
Printing	$ 329,467	371,609	411,294	458,820	410,737	433,700
Mailing					93,019	99,300
Subscription Handling	83,524	71,624	66,392	68,512	71,433	74,650
Circulation Promotion	5,452	6,895	3,884	230	-	-
Total	$ 418,443	450,128	481,570	527,562	575,189	607,650
Excess of Income over (Expense)	$ 190,002	189,583	172,697	258,264	212,868	185,100
Statistical Data:						
Number of Text Pages (Including blanks & covers)	18,129	20,613	22,636	24,779	26,153	26,232
Text pages less 2%	17,766	20,201	22,183	24,283	25,630	25,707
Output Cost/Corrected Page	23.55	22.28	21.71	21.73	22.44	23.64

*Does not include data on PHYSICS TODAY

30 October 1969

Table 4

ACTUAL PAGE CHARGE COLLECTIONS FOR 1968

Journals of	Amount
The American Physical Society*	$ 1,261,632
The Optical Society of America*	92,877
Acoustical Society of America*	90,910
American Association of Physics Teachers*	15,110
American Astronomical Society*	49,028
Society for Applied Spectroscopy**	12,387
American Vacuum Society**	7,145
American Institute of Physics	1,089,380
Total	$ 2,618,469

* Member Society
** Affiliated Society

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COST PER CORRECTED PAGE

(DOLLARS/PAGE)

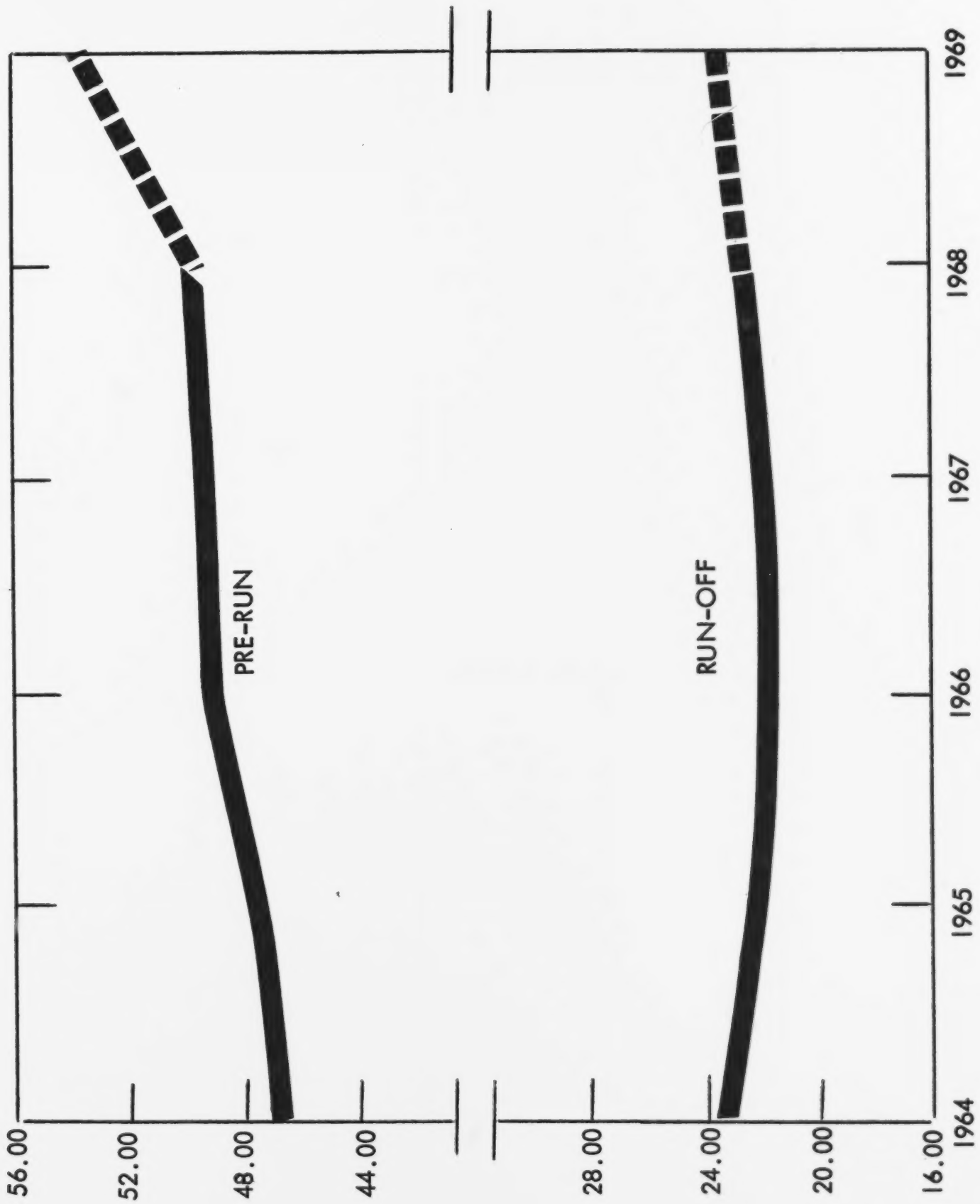
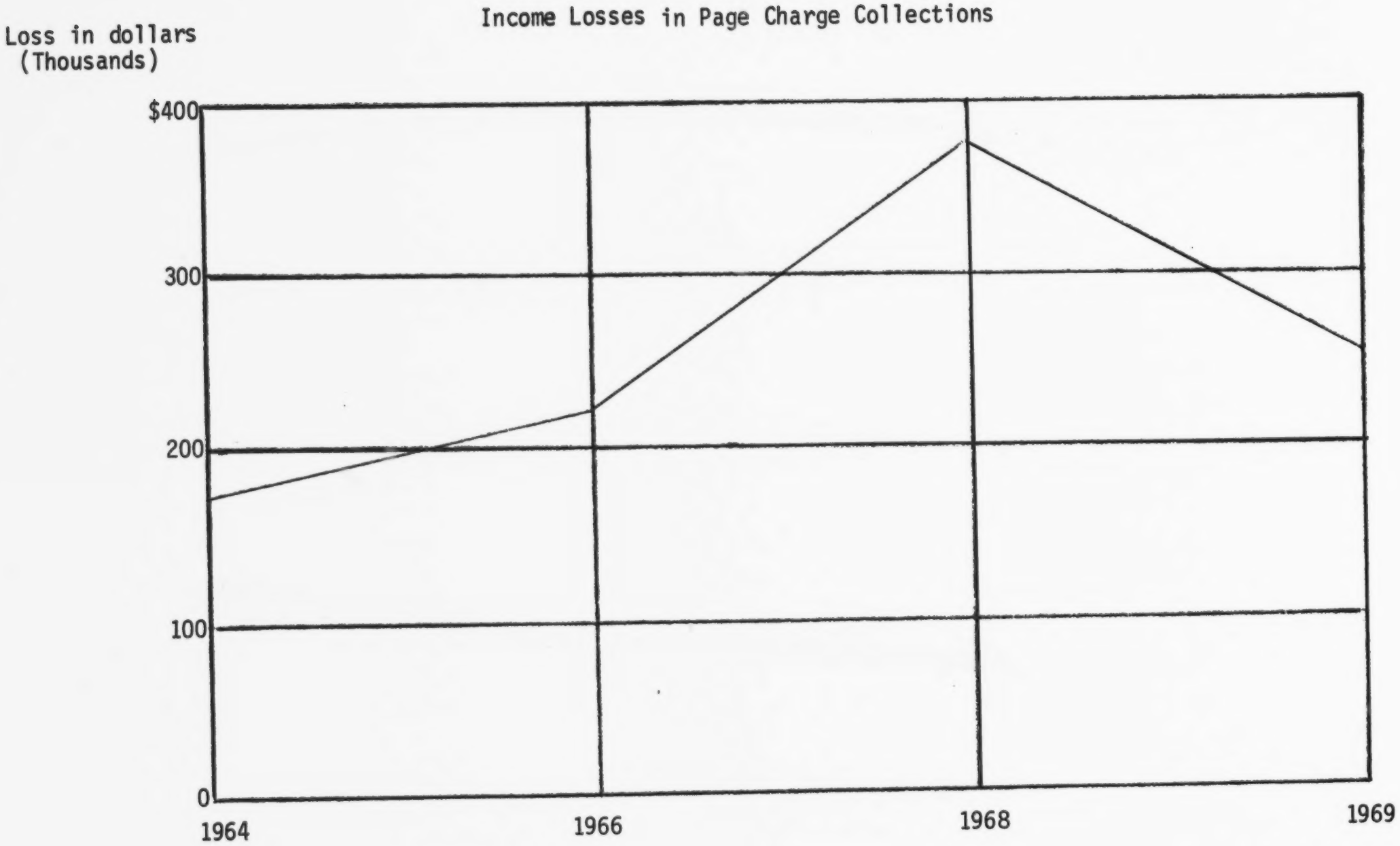


FIGURE 1

AIP ARCHIVE JOURNALS

COST PER PAGE VS. YEAR

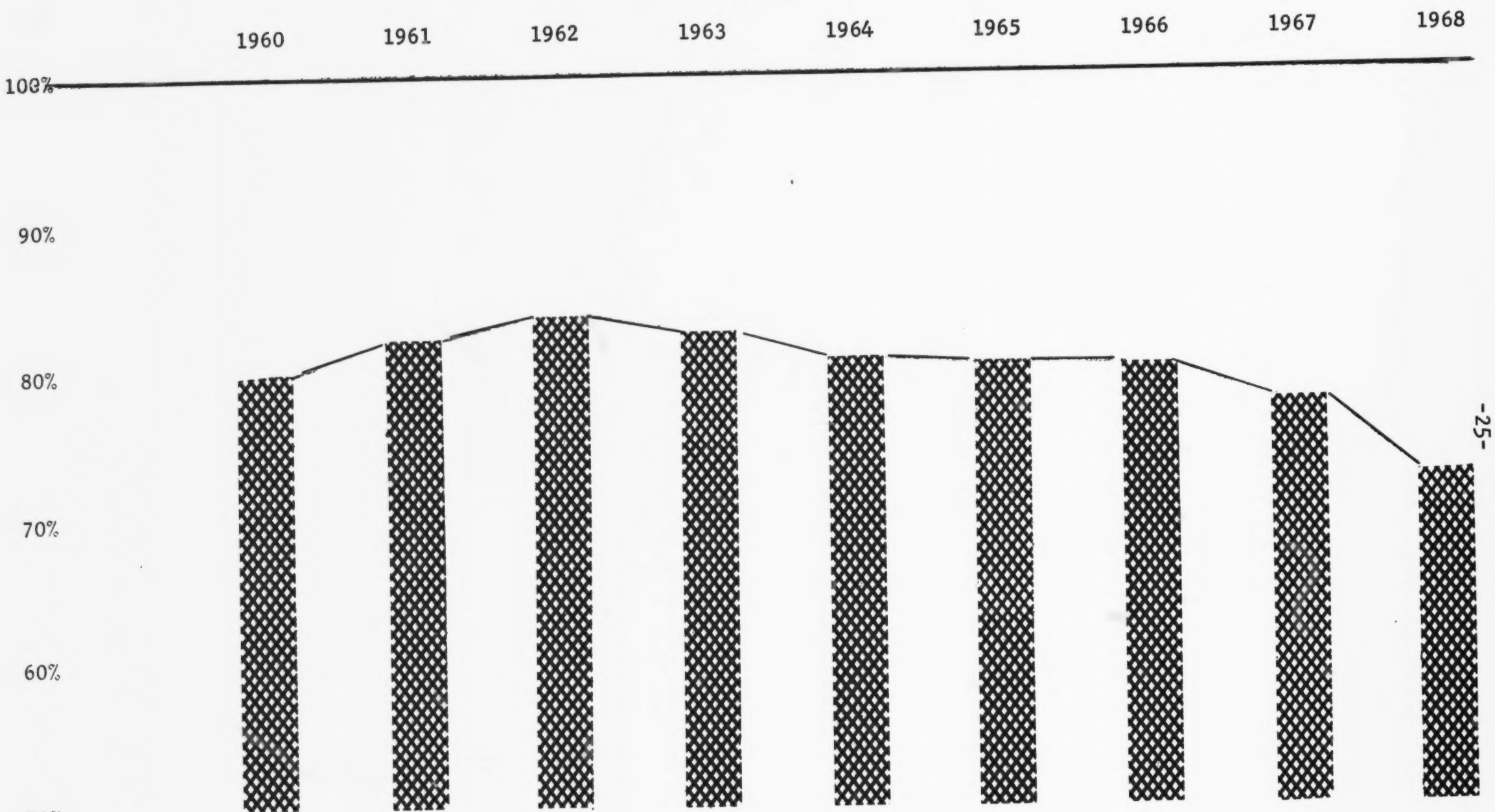
Figure 2


Income Losses in Page Charge Collections
Loss in dollars
(Thousands)
$400
300
200
100
0
1964
1966
1968
1969

SUMMARY OF AIP ARCHIVAL JOURNALS

FIGURE 3

Percentage of Pages Honored



	1960	1961	1962	1963	1964	1965	1966	1967	1968
Percentage	(79.82)	(81.97)	(83.52)	(82.32)	(80.50)	(80.15)	(80.05)	(77.75)	(72.69)
PAGES									
Will Honor	7,460	9,299	12,168	12,448	13,752	15,529	17,061	18,234	18,010
Will Not Honor	1,662	1,848	2,195	2,385	2,901	3,572	3,980	4,645	6,251
No Order	224	199	205	288	431	274	272	574	515
Excess Pages	39	52	82	277	303	270	300	358	355
Total Pages	9,385	11,398	14,650	15,398	17,387	19,645	21,613	23,811	25,131

ATT ARCHIVE JOURNALS SUMMARY

FIGURE 4

Percentage of Pages Honored
Cumulative by Report (Issued Monthly) 1969